

## **REMARKS/ARGUMENTS**

### **I. STATUS OF CLAIMS**

Claims 26 and 32-33 have been amended. Accordingly, claims 18, 26, 27, 29-33 and 35-36 are presently pending in the application. All pending claims stand rejected.

### **II. CLAIM OBJECTIONS**

Claim 32 was objected to due to the language. Claim 32 has been amended as suggested by the Examiner. Accordingly, Applicants believe that the objection has been overcome.

### **III. CLAIM REJECTIONS – 35 U.S.C. § 103**

Claims 27, 29, 30, 32, 33 and 36 are rejected under 35 USC §103(a) as being unpatentable over Gilboa (US 2002/0193686, hereinafter **Gilboa**) in view of Werp et al. (US 6,015,414, hereinafter **Werp**), and further in view of Ferry et al. (US 7,276,044, hereinafter **Ferry**). In addition, claims 18, 26, 31 and 35 stand rejected under 35 U.S.C. § 103 as being unpatentable over Gilboa in view of Werp, further in view of Ferry and further in view of Strommer et al. (U.S. 2001/0031919 A1, hereinafter **Strommer**). Applicants respectfully traverse these rejections.

Regarding independent **claim 33**, the Examiner asserts that **Gilboa** teaches some of the procedures of claim 33 based on the following sentence: "*moving the probe, within said body, so as to minimize a difference between the measured location of the probe and the estimated location of the target point of interest*" (**Gilboa**, Para. [0016]). Applicants respectfully traverse this assertion.

The cited sentence of **Gilboa**, alone, does not teach or suggest determining a new first position of the catheter in the path according to a position signal received, and also determining a new position to which the catheter is to be moved based on the determined first position and according to the path established from the topological representation; operating a moving mechanism to move the catheter to a second position, according to the new determined position; and receiving the position signal and performing the operating step, and when the second position is substantially identical with the new determined position determining a further new

position on the path to which the catheter is to be moved, and when the second position is not identical with the new determined position determining at least one corrective movement for the catheter.

The Examiner also asserts that where **Gilboa** and **Werp** fail to explicitly teach at least one corrective movement involving backward movement, **Ferry** teaches a method of withdrawing the catheter. The Examiner further asserts that it would have been obvious for a person skilled in the art to include backwards movement in order to reduce static friction. Applicants respectfully traverse this rejection.

The backward movement suggested by **Ferry** does not meet the suggested corrective movement feature recited in claim 33. The backward movement of **Ferry** is not part of a corrective movement at all. In fact, **Ferry** does not discuss corrective movements at all for guiding a catheter.

**Ferry** merely suggests advancing the catheter while moving the catheter constantly forward and backward, instead of simply advancing the catheter, making the catheter "stutter" in order to reduce static friction during guidance of the catheter. In the method of **Ferry**, the catheter advances forward even when the stuttering procedure is applied. As shown in Figure 21 of **Ferry**, the average of the location of the catheter tip is constantly advanced forward, indicated by the right arrows in Figure 21. The constant backward-forward movement in **Ferry** is intended to keep the catheter in motion, in order to reduce or eliminate static friction. The Examiner's attention is directed to column 9, lines 16-25 of **Ferry** (reproduced below):

*"When an elongate medical device is being advanced in a body, friction between the device and the tissues of the body may cause difficulty in advancing the device. The inventors have discovered that by keeping the medical device in motion, static friction can be eliminated. Thus upon advancing a medical device, ... advance the medical device and withdraw it slightly, rather than simply advance the medical device. More preferably, as shown in FIG. 21, the device would be advanced a first distance, e.g., 0.003 inches, then retracted a second distance, e.g., 0.002 inches, advanced the second distance, e.g., 0.002 inches, and retracted the second distance 0.002 inches. Then the cycle is repeated, the device advancing a net 0.001 inches with each cycle. When an*

*embodiment of the present advancer system is idling, the advancer drive unit may also be operated to successively move the medical device forward and back or to "stutter" to reduce static friction. Alternatively, immediately before the medical device is advanced, the advancer can be controlled to begin advancing and retracting the device to reduce static friction."* (emphasis added) (col. 9, lines 16-35).

Unlike **Ferry**, claim 33 recites a corrective movement which includes retreating the catheter backward, when the advancement of the distal portion of the catheter does not match the new position in which the catheter is to be moved. During such a corrective movement, the catheter is only retreated backward, with no forward movement.

While **Ferry** suggests constant backward-forward movement of the catheter, the corrective movement of claim 33 is applied only when the advancement of the distal portion of the catheter does not match the new position in which the catheter is to be moved. For example, when the catheter hits an obstacle in the lumen, the backward corrective movement is applied in order to maneuver the catheter tip to overcome the obstacle.

**Ferry** suggests retracting the catheter along a distance of, for example, 0.002 inches, before advancing the catheter forward along 0.003 inches. Thus, if the catheter would have to be withdrawn along a distance of 2 inches, the method of **Ferry** would not have been applicable. Thus, it is shown that the backward movement of **Ferry** does not depend on the actual features of the lumen in which the catheter is advanced, unlike in claim 33, where the corrective movement is applied only when required (*i.e.*, when the advancement of the distal portion of the catheter does not match the displacement of the catheter).

Additionally, **Werp** discusses "*controlling movement of a catheter through a medium, in which a flexible catheter ... is pushed through a medium*" (**Werp**, col. 3, lines 44-46; emphasis added), where the corrective movement of the catheter employs vector correction. Such vector correction is not applicable in guiding a catheter through a lumen system, for example, blood vessels. The combination of **Werp** and **Ferry** would have still yielded a simple vector correction, while the catheter is constantly "stuttered" backwards and forwards.

Thus, neither **Gilboa, Ferry** nor **Werp** teach the corrective movement as claimed in the present application. Even if a person skilled in the art would have modified **Gilboa** and **Werp** to include the "stuttering" of **Ferry**, he would not have learned or achieved the corrective movement of the present application.

Accordingly, claim 33 is neither taught nor suggested by **Gilboa, Ferry** and **Werp**. Applicants respectfully request that the rejection of claim 33 be reconsidered and withdrawn.

The Examiner further asserts that "pulling the catheter when an ideal position is not reached is considered an obvious navigation technique, and the present invention can be considered automating this originally manual activity". This assertion is respectfully traversed.

None of the prior art (admitted or cited) disclose determining a new position to which the catheter is to be moved, and when the position of the catheter is not identical with the new determined position, determining at least one corrective movement for the catheter, according to the path established from the topological representation. Specifically, none of the prior art disclose that the corrective movement includes retreating the catheter backward within the lumen system.

**Claims 18, 27, 29-32 and 36** depend from claim 33 and thus include all of the limitations thereof. Accordingly, for at least the same reasons set forth above in connection with claim 33, Applicants respectfully submit that the rejection has been traversed. Moreover, these claims set forth further novel features of the invention.

Regarding independent **claim 26**, Applicants assert that **Gilboa, Werp** and **Ferry** do not teach the corrective movement as recited in claim 26 (as also discussed above in connection with claim 33). Thus, even if a person skilled in the art would have modified the combination of **Gilboa** and **Werp** to include the "stuttering" of **Ferry**, he would not have learned or achieved the corrective movement as claimed in the present application. The addition of **Strommer** to **Gilboa, Werp** and **Ferry** also does not teach the corrective movement claimed in the present application. Thus, this combination may not be considered to disclose or teach the features of claim 26 of the present application. Applicants respectfully request reconsideration and withdrawal of the rejection.

**Claim 35** depends from claim 26 and thus includes all of the limitations thereof. Accordingly, for at least the same reasons as given for claim 26, Applicants respectfully submit that the rejection of claim 35 has been traversed. Moreover, claim 35 sets forth further novel features of the invention.

The Examiner further asserts that manually twisting the catheter is admitted as known in the art. This assertion is respectfully traversed.

None of the prior art (admitted or cited) disclose determining a new position to which the catheter is to be moved, and when the position of the catheter is not identical with the new determined position, determining at least one corrective movement for the catheter, according to the path established from the topological representation. Specifically, none of the prior art disclose that this corrective movement includes retreating the catheter backward within the lumen system, and twisting the catheter. Reconsideration and withdrawal of the rejection of claim 35 is hereby requested.

In view of the above arguments and in further view of foregoing claim amendments, a notice of allowance is respectfully requested.

Respectfully submitted,

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